Citizens' Bulletin

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The Connecticut Department of Environmental Protection

Children get familiar with Smokey Bear

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Cover Photo: Smokey Bear at work: Tom O'Brien

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Cruise for credits

Students who participate in Mystic Marinelife Aquarium's Coastal Ecology course will have the unique opportunity of conducting a portion of their studies aboard the wooden schooner "Voyager." The three-credit summer course, sponsored by Mystic Marinelife Aquarium and the University of Connecticut, will run from June 11 through June 27, 1984.

Participants in the course are prepared for five days at sea by a series of lectures at Mystic Marinelife Aquarium. Topics of the lectures will include diversity and productivity of estuarine and continental shelf communities, ecological sampling techniques, life histories, and fisheries biology.

Instructors for both the classroom and cruise aspects of the course are Jim Stone, Aquarium Assistant Curator of Education, and Dr. Arthur Bulger, Assistant Professor of Biology at the University of Virginia. Lecture dates for the summer 1984 course are June 11-15.

Aboard the "Voyager" from June 18-22 students will visit research areas such as the Thames River, Gardiner's Bay, Block Island, and Narragansett Bay. Student participants will attempt to build a profile of the physical and biological characteristics of each study site. This may include information about water temperature, salinity, and turbidity as well as an analysis of the animals and plants that can be collected.

The "Voyager" is equipped with a live well containing fresh seawater so specimens may be maintained for further study. Dissecting equipment and microscopes are also available for use during evening study sessions.

The group will return to the Aquarium for review and examination on June 25-27.

Coastal ecology, one of two college-level courses taught by the Aquarium in conjunction with the University of Connecticut, is in its sixth year. For more information, or to register, call Jim Stone at the Aquarium's Education Department, (203) 536-4208.

Mystic Marinelife Aquarium is a division of Sea Research Foundation, Inc., a nonprofit organization dedicated to education and research. ■

Corrections

The caption for the bottom picture on page 5 of the December Citizens' Bulletin should have read: Al Letendre and Bob Pernell, under supervising land agent Gordon Gibson of the Land Acquisition and Management Unit, are responsible for acquisitions of and improvements to State lands. One example of the latter is the new admission booths and road improvements at Hammonasset State Park. ■

Japanese Sub & Flammable Forests =Smokey Bear

WW-II Threat to West Coast Forests Inspired the Conservation Symbol Millions Love

By John Waters

All across the country fire-fighting crews are getting ready for the Spring fire season. One of the most important tools for reducing the number of forest fires is public education. The United States Forest Service has used one symbol, Smokey the Bear, to remind the American public of the necessity to prevent forest fires. In Connecticut, Smokey appears at many schools and public events. The following is a brief history of the Smokey Bear campaign and of the bear himself.

War and Wood

In the spring of 1942, only a few months after Pearl Harbor, a Japanese submarine sneaked through the remnants of the American Pacific Fleet and shelled an oil field near Santa Barbara, California, not far from Los Padres National Forest.

Damage to the oil field was not substantial, but the possibility that enemy subs could set fire to the great forests along the West Coast was truly frightening. Destruction of our sources of wood could seriously hamper America's ability to fight back because millions of board feet of wood were essential for everything from ships to barracks to gun stocks to packing crates. Furthermore, to have enemy destruction of forests added to the normal yearly destruction of them due to natural causes and human carelessness was unthinkable. (In 1941, for example, there had been 208,000 forest fires involving 30,000,000 acres of woodland.)

Fight on Forest Fires

Of these 208,000 fires, the U.S. Forest Service said that 90 percent were caused by careless people. Therefore, it organized the Cooperative Forest Fire Prevention Campaign to encourage the public to participate actively in fire prevention.

One of the first groups to help it in 1944 was the Wartime Advertising Council. This consisted of advertising professionals who volunteered their services to the government to help it stir up public participation in the war effort. The Council's campaigns had helped to recruit nurses, sell war bonds, and salvage scrap metal and scrap lumber. Its members welcomed the opportunity to participate in an attack on forest fires caused by carelessness.

Bambi Came First

The first posters the Council developed were straightforward pitches asking people to help prevent forest fires. A little later, the Council decided to use an animal in its ads to make them more appealing. The first animal to come to mind was Walt Disney's famous fawn, Bambi. This was a step in the right direction, but Bambi had been "loaned" to the campaign by Disney and

could not be used forever. Furthermore, the group felt a more rugged creature would be more appropriate for a forest fire fighter. Therefore, a bear was selected and the Council spelled out a set of specifications requiring him to have a short nose and black or brown fur, to look intelligent, and to wear the kind of campaign hat worn by forest rangers.

The Drawing Board Smokey

Albert Staehle, a good animal artist, got the job of bringing the specifications to life. His original draft painting showed a bear pouring a bucket of water on a campfire At that stage, the bear was pantless; but sometime later, he acquired a pair of blue jeans that he hasn't changed since, at least in his portraits. He also acquired the shovel he always carries. Finally, he was named "Smokey."

Quick Results

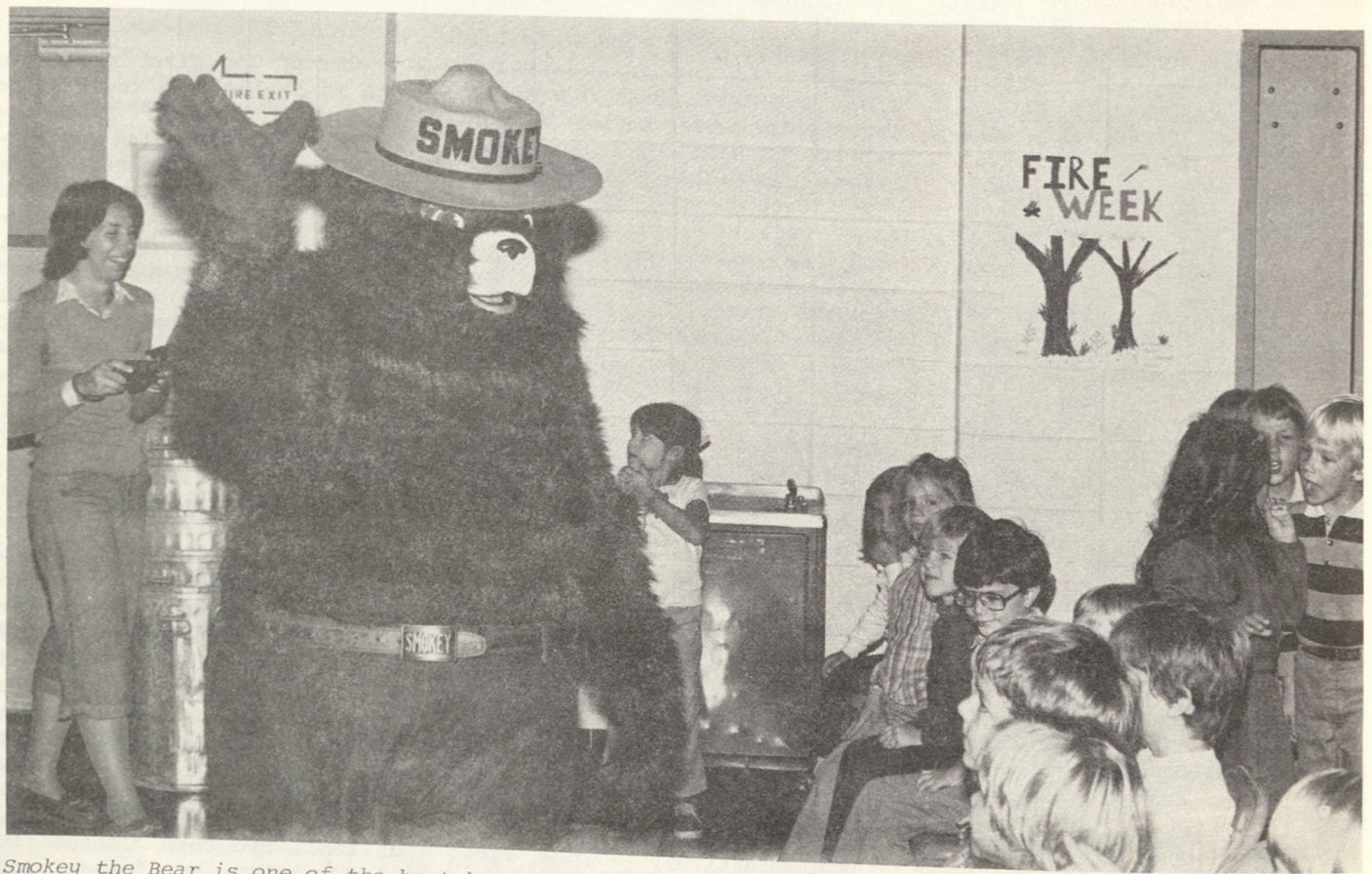
Smokey caught on with the public immediately when they saw him in posters and car cards, or in newspaper or magazine ads. Big radio sponsors donated time for Smokey to fight carelessness with matches and campfires in the forest. The result? The incidence of forest fires started to decline.

By the time the war ended in 1944, Smokey had become a household word. However, he was still only an idea in an artist's head. There was no actual animal named Smokey. In fact, it was not until 1950 that there was a real, living bear destined to become Smokey. It happened like this:

The Real Smokey

In the spring of that year, an undersized brown bear cub was born in the Capitan Forest of Lincoln National Forest in New Mexico. Shortly thereafter, a terrible fire swept the forest. Reports came to Ray Bell of the New Mexico Department of Game and Fish that a bear cub was wandering near the fire line without his mother. Bell told Game Warden Speed Simmons to bring the cub in if he saw it. Simmons found the cub up a tree, with badly burned paws and hind legs. A rancher going off duty after helping the firefighters offered to take the cub home; but when he got there, neither he nor his wife knew what to do to help it. Ray Bell, hearing about this, drove 14 miles to the rancher's and offered to fly the four-pound cub to a veterinarian in Santa Fe. There, Dr. E. J. Smith treated the burns and bandaged them.

When State Game Warden Elliott Barker heard about the



Tom O'Brien

Smokey the Bear is one of the best-known symbols in America.

cub, he sensed that here was an opportunity for the Cooperative Forest Fire Prevention people to show the public dramatically the shocking effects of forest fires. He authorized Bell to take a photographer back to the burned-out forest where the fire had occurred and shoot pictures of the place where Smokey (they were calling him that by now) had been rescued.

Smokey Adopted

Meanwhile, Smokey was in an animal hospital, but Dr. Smith was worried because the cub refused to eat and would soon die if it didn't receive nourishment. Bell's little daughter Judy was sure her mother could induce him to eat, so they let her take Smokey home. Mrs. Bell force fed him a paste of pablum, milk, and honey. It tasted so good he wanted more, and the feeding problem was solved.

As Smokey recovered and grew, he felt right at home and would jump on Judy's or Mrs. Bell's lap for a nap. He also got along fine with their cocker, Jet, eating from the same dish and sharing sleeping quarters on the back porch. However, when Mr. Bell brought home an orphan female bear cub, Smokey fought with it so much that they had to send it to a zoo.

Nasty Smokey

Ironically, the only member of the family that Smokey refused to get along with was Mr. Bell, the man to whom he owed his life. It had been Bell's chore to change the dressings and bandages over the burned places. This hurt, and Smokey always tried to fight him off. Failing in that, he would walk past Bell and suddenly jump back and bite his ankle. At first, it was amusing; but as he got bigger, the biting hurt. He also bit Bell's hands, to the point where Bell had to wear gloves when handling him. Once, on a radio broadcast involving Smokey and Bell, the cub suddenly bit his hand, causing Bell to break out in language not considered decorous by the FCC.

The day was rapidly approaching when Smokey would no longer be suitable as a house pet. Bell and his friends thought Smokey should have the U.S. Forest Service's blessing as the one and only official Smokey Bear, supplanting the imaginary Smokey used in artists' drawing and paintings. They also thought that the National Zoo in Washington should become his permanent home, where he and his fire-prevention message would reach millions of tourists.

Fame at Last

In June, 1950, after cutting miles of bureaucratic red tape, his sponsors prepared to fly Smokey to Washington in a Piper Cub that had his picture painted on the fuselage. Then, the day before the scheduled departure from Hobbs, New Mexico, Smokey disappeared! Had he been kidnapped? Or run away? Or been run over? There were no clues, and his sponsors panicked.

Judy Bell solved the mystery. Smokey had simply pried open the cover of Mrs. Bell's washing machine on the back porch and had climbed in for a little snooze. They found him there, sound asleep in the midst of all the excitement.

A Pair of Cubs

The next morning, after a farewell party and with a crowd to wave him goodbye, Smokey was put in a small cage and nonchalantly fell asleep. As they approached Amarillo for a fuel stop, Pilot Frank Hines called the tower for landing instructions for a Piper Cub with three men and a bear. The tower, thinking they were trying to be funny, sharply warned them that FAA regulations forbid misinformation or horseplay when communicating with a tower. So the two very serious airport officials who were on the tarmac to check them the instant they set down were somewhat crestfallen when out came three men and a bear.

The incident made the news wires, and the rest of the journey was a triumphal procession, with larger and larger crowds at every fuel stop. At St. Louis, a big reception awaited them, and Smokey was honored with a special room at the zoo and a special guard to protect him while he slept.

By the time Smokey reached Washington in a pouring rain, he was greeted by hundreds of scouts, sightseers, and the press corps, as well as by Senator Chavez of New Mexico. Since then, millions of sightseers and Smokey-fans have visited the National Zoo to see him or his successor. Some visitors were disappointed to see that, in the zoo, Smokey did not carry a shovel or wear his jeans and ranger hat, presumably because they were his work clothes in the forests.

A Ride for the Bride

In 1960, Smokey weighed 250 pounds and was 12 years old, which is middle age for a bear. His managers decided it was time for him to produce an heir. A bride-hunt turned up 18-month-old Goldie. She was a 100-pound orphan from New Mexico. Like Smokey, she was flown to Washington with considerable hoopla and, with a motorcycle police escort, was conveyed to a cage next to Smokey's. This was to give him time to get used to her before letting her share the same cage.

Platonic on the Potomac

However, as Robert Burns so astutely noted, "The best-laid schemes o' mice and men gang aft a-gley." When Goldie finally moved in with Smokey, he didn't fight with her, as he had with a female bear cub years before; in fact, he apparently didn't do anything. They were just chums, and the problem of succession remained unsolved.

In 1971, a young, orphaned male bear was found in the same

New Mexico forest Smokey had been born in. He was named "Little Smokey," and Ray Bell flew him to Washington. The Three Bears lived happily together until the original Smokey died in 1976 and was buried with honors in Smokey Bear State Park near Capitan, the place of his birth in New Mexico. Another bear was found to replace him as the Smokey Bear symbol at the zoo.

Fortieth Anniversary Stamp

This year, the Post Office is issuing a Smokey Bear stamp to commemorate the fortieth anniversary of the conception of a fire-prevention bear by the Wartime Advertising Council. Since then, Smokey Bear has become the best-recognized and best-loved public relations or advertising symbol ever created. He is known to hundreds of millions of children and adults all over the world. For example, about 3,000,000 people a year visit the National Zoo in Washington to see him.

Forest fires and forest acreage destroyed by them have dropped dramatically since the advent of Smokey. In 1941, as mentioned earlier, 208,000 forest fires destroyed 30,000,000 acres of woodland. At present, fires are estimated to be down to about 135,000 a year, with acreage destroyed down to two to three million. Smokey's slogan: "Remember -- only you can prevent forest fires!" really works.

Smokey is Big Business

The popularity of Smokey Bear is so great that it has spawned businesses built around novelties bearing the bear symbol. These products are manufactured under license and royalty agreements issued by the U.S. Department of Agriculture, to whom the U.S. Forest Service reports. Such agreements are authorized by Public Law 359, passed unanimously by both houses of Congress in 1952. The purpose of the legislation was to prevent misuse or over-commercialization of the symbol. Royalties, which have amounted to millions of dollars, are passed on to the Cooperative Forest Fire Prevention Campaign.

In addition to such obvious novelties as T-shirts, tote bags, sun visors, and dolls, ingenious entrepreneurs have come up with such exotics as Smokey Bear beach balls, watches, in Mr. or Mrs. or Jr. Smokey Bear models, license plate frames, splash flaps for trucks, air fresheners, ear rings, thimbles, and patterns for cross-stitching and needlepoint.

Smokey has achieved fame in other ways. There is a Smokey Bear Song. In 1966, he first appeared in the famous R.H. Macy Thanksgiving Day Parade as a 59-foot balloon that cost about $26,000 to make. Seven years before, in the equally famous Tournament of Roses Parade in Pasadena, he was seen for the first time on the big Forest Fire Prevention Float. It was a timely appearance because there was a forest fire burning in the Santa Monica Mountains, not far away. A 26-foot statue of Smokey was built in International Falls, Minnesota, in 1954.

Personal Appearances

The next time Junior's class is going to put on a musical show, don't let anybody persuade you to run up a Smokey Bear costume on the family sewing machine. It's against the law to own such a costume. Only state and federal agencies may do so; and even then, use of them is strictly limited to programs predominantly devoted to forest fire prevention.

They may be borrowed by fire departments or fire wardens only, and there are remarkably strict regulations as to what the wearer must and must not do while in one. Costumes of the type that the State lends can cost up to a couple of thousand dollars apiece.

Literature

Institutions, conservation groups, or civic groups seeking posters, teaching materials, or other printed matter about Smokey Bear may obtain it from the four offices listed below. Farmington accepts phone orders only. Marlborough, Voluntown, and Harwinton accept phone or written requests.

State Forest Tree Nursery
Box 23A, RFD 1
Voluntown 06384 (376-2513)

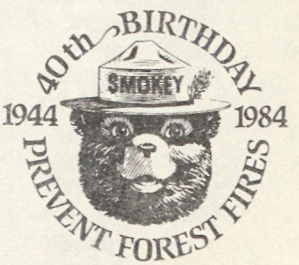
Department of Environmental Protection
209 Hebron Road
Marlborough 06447 (295-9523)

Department of Environmental Protection
Route 6
Farmington 06032 (677-1819)

Department of Environmental Protection
Plymouth Road, RFD 4
Harwinton 06791 (485-0226)

Morrison History

The facts in this article are mainly from an excellent illustrated history of Smokey Bear's life: "Guardian of the Forest" by Ellen Earnhardt Morrison (Vantage Press, 1976). Now out of print, copies for reference probably are available at regional offices of the Forest Service of the U.S. Department of Agriculture. Contact Smokey Bear Headquarters, Washington, D.C. 20252 to find out where others might be found. (The 20252 Zip Code is a private one for Smokey Bear mail only.)



The Old Mill Pond

Westport Undertakes Restoration Project

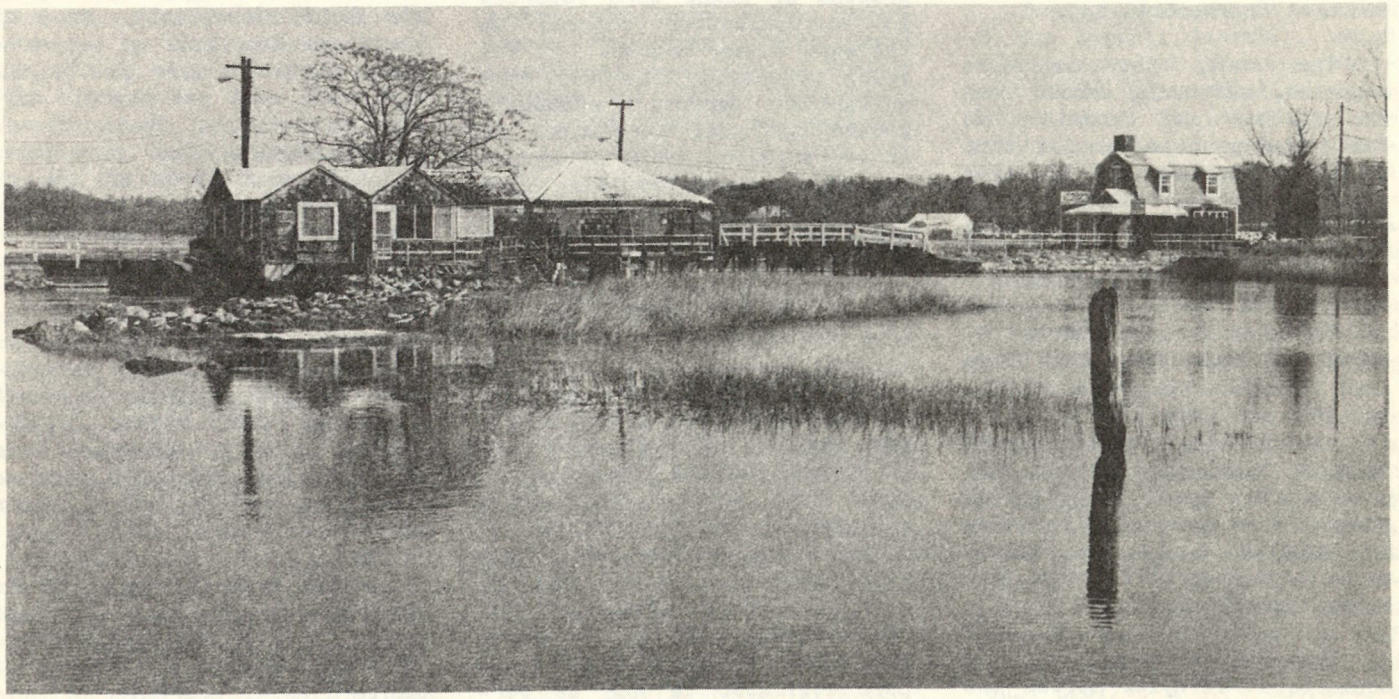
By John Kazzi

Its waters once held an abundance of shellfish, so many that one longtime resident, Captain Walter Allen, harvested them regularly to serve in his restaurant on the western shore. A mill thrived at its outlet, grinding corn grown in fertile watersheds for shipment to the West Indies.

Created in the early 1800s by the damming of one of the two waterways that still provide its freshwater source, Westport's Sherwood Millpond today is the town's largest estuarine system. Bordered to the east by Sherwood Island State Park, to the south by Long Island Sound and the barrier beaches of Compo Mill and Old Mill, to the west by suburban development and to the north by the Connecticut Turnpike and the Metro-North railway, the millpond encompasses more than 80 acres of open water and saltwater marsh.

Once neglected and plagued in recent years by excessive siltation and algae blooms, a greatly reduced tidal flushing action and the degradation of its shellfish population, the millpond has become one of the town's top environmental priorities.

Town records show that Thomas Ockley built the first



John Kazzi photos

A high tide in the Mill pond channel and several summer cottages.

mill at what is now the millpond outlet in 1705. The mill changed hands several times, and the first references to the damming of a stream to provide additional power appear around 1800. The mill was destroyed by fire in 1832, but was rebuilt with the addition of a cooper shop to make barrels to ship the grist. Ships plying the Sound docked alongside the mill itself.

The pond, fed by the Sound tides and two watercourses, Muddy Brook and Pussy Willow Brook, became widely known for its rich shellfish beds and oysters. The tide gates were installed in 1902, and Captain Allen opened his restaurant several years later. As late as the 1930s much of the land surrounding the pond was still used agriculturally.

The first warning of a change within the millpond was given in 1949 when a Connecticut Beach Erosion Control Report performed by the U.S. Army Corps of Engineers found that up to a foot of new sand had been deposited in the southeast area near the tide gates. Samples taken found the new sand to have characteristics similar to grain samples taken from Compo Mill Beach and the state beach at Sherwood Island.

The sand, the engineers reported, was being eroded from the beaches and deposited in the incoming tide, action that continues to occur and has been blamed for the buildup of a sand shoal at the tip of Compo Mill Beach where the Sound enters the millpond channel.

The next decade, town officials and two consulting firms that undertook millpond studies in 1980 and 1982 say, was that in which the most severe changes to the pond and its surrounding area took place, changes that would be revealed in ensuing years by siltation, eutrophication and reduced tidal flow.

The construction of the Connecticut Turnpike across the upper reaches of the pond during 1951 to 1955 resulted in the removal of thousands of cubic yards of wetland soil judged to be too soft to support the roadway embankments. The dredged material was placed within an earthen dike on the shore, but the dike leaked and broke causing excessive silting of the upper pond.

The death in 1954 of Capt. Allen, whose restaurant had become as well-known as the millpond, ended the regular operation of the tide gates. For many years Allen had opened and closed the gates to allow the maximum exchange of water between the pond and the Sound. Between 1955 and 1960 the western sluice and tide gates were shut and cemented over by the town.

Commercial and residential construction within the watershed areas of Muddy and Pussy Willow Brooks, which together comprise more than 4,000 acres of land, increased, causing the additional depositing of silt and bringing new concentrations of heavy metal pollutants.

In 1963 the first above-normal levels of coliform organisms were recorded. In the summer of 1966 excessive growths of algae were reported as eutrophication occured in the warm summer months. In the years preceeding the two consultant's reports residents around the pond complained of an overpowering smell of hydrogen sulfide gas resulting from the decomposition of aquatic plants. It was even reported that the gas was responsible for peeling the paint off homes.

The millpond today is less than two feet deep in some upper reaches at high tide and only three to four feet deep in most other areas. Tides rise rapidly in the pond for one to three hours before mean high tide, then begin their ebb almost immediately and continue for the next nine to 10 hours. The tidal flushing action has been estimated at only 26 percent during the exchange cycle.

Despite the presence of heavy metal pollutants some concentrations of shellfish remain, according to Shellfish Warden Charles McElwee. The largest numbers are found at the millpond outlet, where the most tidal flushing action occurs, and at another small creek, Old Mill Creek, that flows east from the pond through the state park and into the Sound. Because of the contaminants and continued high coliform counts shellfishermen have been prohibited from taking the bivalves directly from the pond for consumption for several years, McElwee said. The pond has also been declared off-limits for recreational use by the Westport-Weston Health District.

The concentrations of lead, cadmium, and zinc that enter the pond from Muddy and Pussy Willow brooks will double during the next 10 years, the 1982 Engineering and Environmental Study done by consultant Oley-Pavia, Inc. predicts, if the current yearly increases of heavy metal pollutants are allowed to continue.

Dredging the pond to restore a more effective tidal flushing and eliminate the eutrophication was rejected by the first consultant because of cost and the lack of an adequate disposal site nearby for the sand, silt and organic matter. But the Pavia firm's recommendation that more than 200,000 cubic yards of the material be removed is being considered a viable solution by the town. It has been proposed that sand taken from the tide gate area, if found to be clean, be transported to Cockenoe Island, the undeveloped 27-acre island Westport purchased from United Illuminating in 1969 with State Open Space Funds. The sand would be used to restore island areas lost to erosion.

Armed with the Pavia firm's report, Westport took the first steps towards the rejuvenation of the pond in 1983, and additional action is anticipated this year.

Pedestrian bridge crossing tide gates, as seen from the Sound side of the Mill pond.

For the first time since the death of Capt. Allen, the tide gates were operated on a regular basis in June, July and August last summer under a plan proposed by Conservation Director Frances Pierwola and Director of Public Works Gerald Smith. In past years the gates had only been opened sporadically, each time for several consecutive days, during which the pond was completly drained in the day and its benthic organisms exposed to direct summer sun and heat.

Under Pierwola and Smith's direction the gates were opened only at night, which allowed a complete tide cycle to take place within the millpond without exposing the bottom-dwelling marine life. That, Pierwola said, resulted in fewer algae growths than in previous summers, the releasing of pondwater high in nutrients and a slowing of the eutrophication process.

The Westport-Weston Health District conducted an investigation of high coliform counts found at Old Mill Beach near the millpond outlet in the spring of 1983 and found that one home's plumbing had been rerouted away from its septic system and onto rocks underneath the home which were exposed at low tide. Another resident of Compo Mill Beach was caught pumping the contents of his septic tank into the pond.

Westport also purchased its first parcel of land on the millpond shore in 1983. While the town already owned one of the barrier beaches, Old Mill Beach, and a property easement to the tide gates, its purchase of the one and one-half acre tract will give additional public access for birdwatchers, crabbers and canoeists. It was also purchased, First Selectman William Seiden says, as a symbolic step to show the town's commitment to the restoration and preservation effort.

The town's annual five-year capital forecast in 1983 targeted a new bond issue of $1,150,000 in fiscal 1984-85 for a combined restoration of the millpond and Old Mill Beach.

During this year's session of the General Assembly, which will convene in February, Westport State Representative Julie Belaga plans to introduce legislation asking for state funding for the completion of the second phase of a beach restoration project at Compo Mill Beach. That second phase is expected to include two new low-profile stone groins, one on each side of the millpond outlet channel, and the dredging of the channel itself.

Through the town's restoration efforts, Pierwola said, a rejuvenated Sherwood Millpond could again serve as a nursery for finfish and shellfish, could support marine life that has either been severely impacted or forced to seek new coastal habitats because of siltation and contaminants, and could provide a more attractive area for waterfowl. ■

They're Only Flying Mice

Bats in Connecticut

DEP Wildlife Bureau Informational Series

General

Bats are the only mammals capable of true flight. A few other mammals glide through the air but don't actually fly. There are nine species of bats that can be found in Connecticut:

Little Brown Bat
Keen's Bat
Red Bat
Indiana Bat
Small-footed Bat
Big Brown Bat
Hoary Bat
E. Pipistrel
Silver Haired Bat

The two most common bats in Connecticut are the little brown bat and the big brown bat. The remaining species are less common and one, the Indiana bat, is on the federal endangered species list.

Biology

Bats are furred, warm-blooded mammals with an average body length of three to six inches and an average wing span of 10 to 15 inches. The bones of a bat's wing are essentially the same as those in human arms and hands; the fingers are extended and connected by a double membrane of skin. Bats are nocturnal but have poor eyesight at night. To overcome this problem they use a highly developed sonar system for location of solid objects (echolocation). They emit a series of rapid sound pulses to perceive motion, distance, speed, trajectory, shape, texture and size of objects, sometimes as thin as a human hair. This echolocation system and their quick reflexes make bats very efficient and agile flyers.

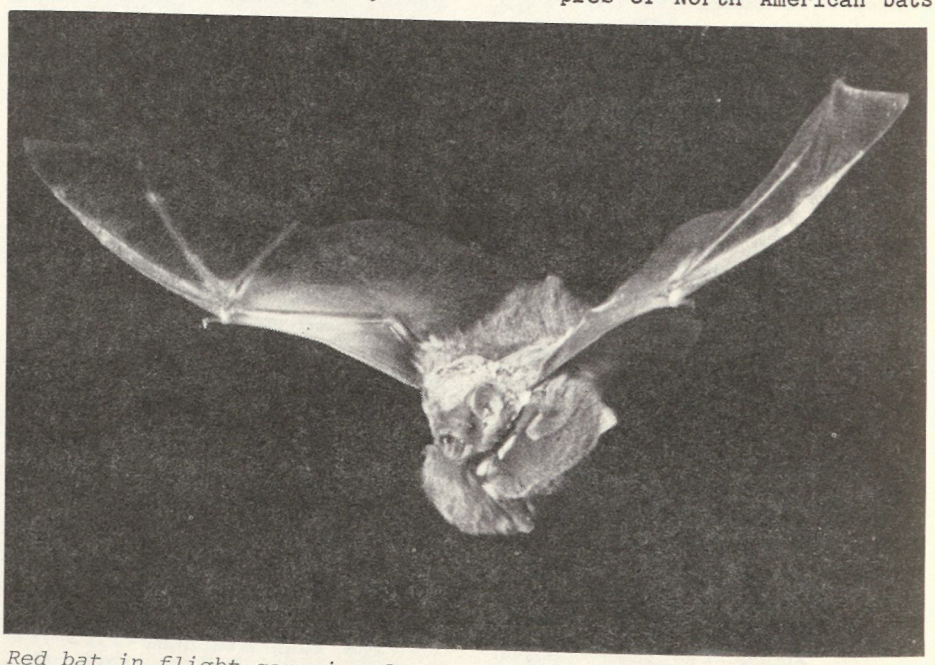
Connecticut's bats are all insect eaters with the exception of the hoary bat, which has also been known to capture an occasional bat of smaller size. Feeding is done almost exclusively on the wing at night. The animal actually catches the insect in a pocket formed by a portion of its wing or tail membrane and then grabs it with its mouth. This procedure occurs in just a fraction of a second. By day, bats roost in trees, caves, buildings, rock crevices or anywhere that is somewhat dark and free of drafts. During the winter months bats either migrate to a warmer climate or hibernate in caves. They usually do not stay in buildings during winter.

Bats mate in the late summer, fall or during arousal periods in hibernation, but embryonic development does not begin until late winter or early spring. The young are born between May and July and are carried by the mother for several days until they become too heavy. The young bats then stay in the roost for about four to six weeks until they are able to fly on their own (about mid-August). In most species, only one offspring is produced per female, per year. This is a very low reproductive rate, which is a major limiting factor controling the numbers of these animals.

Misconceptions

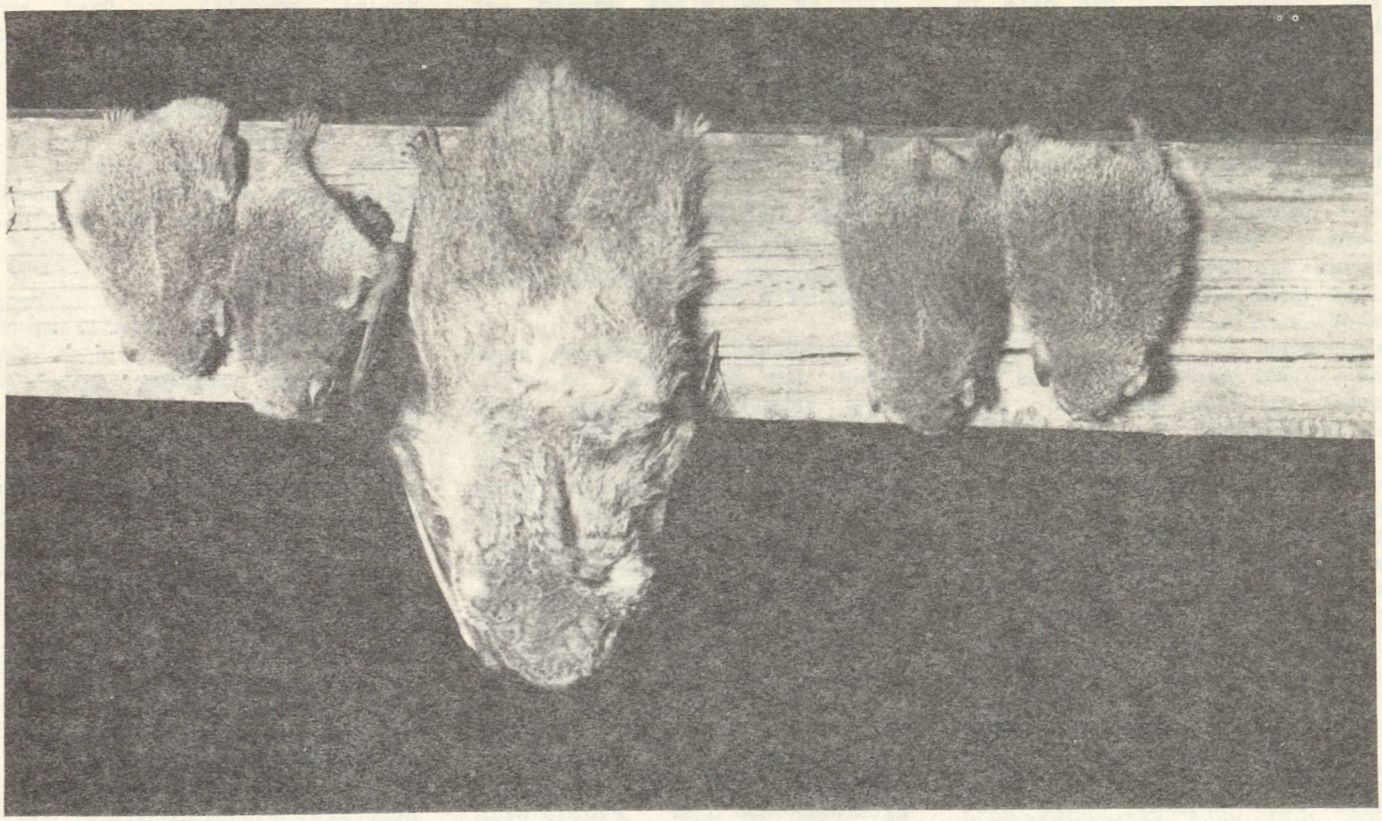
Bats are unfortunate victims of a completely unjustified bad reputation. Many of the following misconceptions have resulted in the needless extermination of large numbers of harmless, beneficial bats worldwide:

1. Like all mammals, including man, bats are capable of contracting and transmitting rabies, but not to the extent many people think. Random samples of North American bats



Leonard Lee Rue Photos

Red bat in flight carrying four babies.



Mother red bat and babies.

have shown rabies in less than one-half percent of those tested. Testing of suspected rabid bats (usually sick or dead) showed only three to ten percent positive. Experts agree that the incidence of rabies among bats is no greater, and often less, than the incidence of rabies in other wild animals. Healthy bats do not attack people, and even a bat with rabies is not usually agressive. However, a bat that is acting abnormally or is found on the ground should be avoided like any other sick animal. The animal can be taken to the Connecticut State Health Laboratory in Hartford for a rabies test. It should be refrigerated (not frozen) and its head should not be damaged; the brain is necessary for the testing. Use extreme care and a pair of tongs or heavy gloves to collect a sick bat for testing.

2. Bat droppings pose no real threat as far as being a source of diseases. A respiratory disease called histoplasmosis is associated with bat and bird droppings but the fungus which causes this disease usually cannot survive in hot, dry attics. Histoplasmosis is more commonly transmitted to people from bird roosts or chicken coops, and people who contract the disease seldom become seriously ill.
3. Bats are not dirty and do not infect homes with dangerous parasites. Like many animals, bats spend a great amount of time grooming themselves to keep clean. Parasites associated with bats are very specialized and do not transmit infections to people. After bats are excluded from an attic, the parasites, without a host, will usually die in a few days.
4. Bats do not get tangled in peoples' hair. Bats that appear to be diving at people are doing nothing more than chasing insects.

Benefits

When people discover that bats are not dangerous, but beneficial because of the tremendous number of insects they eat, they often enjoy having them around. Bats are the only major predators of night-flying insects, which include many agricultural pests. A single little brown bat can eat up to 900 insects in an hour. They often specialize in mosquitoes, and they tend to feed near their roost. Europeans have long been erecting bat houses to take advantage of the bat's insect-eating habits. Plans for bat houses are available from Bat Conservation International listed in the references below.

Management of Nuisances

All wildlife, including bats, should be excluded from human living quarters. But the first decision to be made by

the homeowner who has bats in his attic, garage, or other out-buildings is whether the bats are doing any harm. Most people who want to get rid of bats do so because they've heard exaggerated claims of danger, not because the bats are causing any other problems. Pesticides, pollution, human disturbances and habitat loss have already reduced Connecticut's bat populations. We recommend the following non-lethal control measures and sound wildlife management over extermination:

Exclusion -- If a single bat gets into the house, isolate the animal in that room and open a window or door to the outside. The bat should find its way out on its own. If it has landed on some object in the room, it can be safely removed by hand, using heavy gloves or tongs. Remember that, if handled, bats may try to bite like any other frightened wild animal. All wild animal bites should be throughly washed and examined by a physician.

One or two bats in the house may mean nothing more than that they came in through an open window or chimney. But it could also mean that a colony of bats may be in the attic. The only safe and permanent solution in solving this problem is to "bat proof" the house by sealing up all entrances to the roost. Use screening, hardware cloth, insulation, wood, caulking compound, etc. to close all holes and cracks as small as one-quarter inch. Bats are very persistent, but will not chew to regain entrance. If there are many openings being used, block all of them but one and wait two to three days until all the bats have learned to use this one access point.

In order not to trap any bats inside, sealing of the access holes should be done an hour or two after dark when all of the bats are out feeding, or in November when most bats will have abandoned attics for their winter quarters. Also, bat proofing buildings should not be done between May and mid-August since the flightless young may be trapped inside. Any bats left to die inside will cause a serious odor problem after they have expired.

The I.R.S. allows a tax credit for bat proofing because it improves the energy efficiency of a building.

Repellents -- Several measures can be taken to help repel bats in buildings but have had only limited, temporary success. These include: hanging moth balls in mesh cloth bags from the attic rafters; using flood lights to illuminate the roosting area and entrances; using a fan to create a draft to cool the roosting area; and sticky glues.

Toxic Chemicals -- Poisoning bats is strongly opposed by the findings of numerous scientific studies. Extermination of bats with pesticides is costly, ineffective and it can create serious hazards to public health and the environment. There is no poison bait that would be practical since bats feed entirely on flying insects. A very highly toxic chemical called Rozol tracking powder is registered for bat extermination in Connecticut, but this poison, and others, can be extremely hazardous to human health. It was originally developed to kill rats and mice and not bats. Application of this chemical in Connecticut must be done by a licensed exterminator with a special state permit. The U.S. Environmental Protection Agency has concluded that Rozol should not be used at all against bats because of its potentially serious health hazard. Also, a federal judge ruled that Rozol's use on bats "creates serious hazards of harm to man and the environment" and that "homes treated with Rozol should be decontaminated."

Rozol is an anticoagulant poison that is dusted in the roosting area. The bats get it on their bodies and ingest it during grooming. Dead and dying bats can fall to the floor of the attic or near-by yards where they can be picked up by curious children or pets with possible deadly results. Rozol and similar poisons can cause more problems with these side effects than the original bat problem.

Exterminators -- Many exterminators may be willing to try bat proofing a home but those that mention poisonous chemicals as an initial solution should be avoided. It has been documented that some exterminator outfits have been known to drum up business by using exaggerated claims of bat dangers and using only temporary means of control such as repellents or chemicals alone.

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Those interested in supporting bat conservation, should write: Bat Conservaiton International, c/o Milwaukee Public Museum, Milwaukee, Wisconsin 53233. ■

Warm Ways

Animal Survival in Winter

By Alberto Mimo, Environmental Education Coordinator

As winter approaches and temperatures fall below the freezing point, we tend to believe that most wild animals either migrate to warmer climates in the country, go into winter hibernation, or perhaps freeze to death. Our knowledge regarding winter survival in animals is not complete. Sophisticated methods and systems have been designed by nature to keep animals warm, and the average person is unaware of many of these interesting facts and details. Discovery of nature need not stop with the cold weather; look around and you can find fascinating things.

In order for us to study such an interesting subject, we have to take a good look at the entire animal kingdom. Among the animals that live on the planet, we find two major types: those without the ability to regulate their own internal temperature, known as cold blooded animals, or "POIKILOTHERMS," and those that are able to regulate their own temperature, regardless of the ambient temperature, known as warm blooded or "HOMEOTHERMS."

Poikilotherms cannot regulate their body temperature, and are dependent on the climatic conditions. The term "cold blooded" is something of a misnomer because their body temperature will be the same as that of the environment, which in the desert can be pretty warm. Poikilothermic animals have many interesting ways of surviving the winter. Many of them will migrate to warmer areas; some, like frogs, turtles, crabs, fish, or freshwater mussels, will go to the bottom of a lake or ocean and some will look for refuge below the frost line by hiding in rocks, holes, or digging themselves into the mud. Snakes, salamanders and other lower vertebrates are animals which use this means of keeping warm.

Poikilothermic animals are faced with many problems during the winter. One of these is the fact that when temperatures are lower than their bodies' freezing point, ice crystals will form in their body tissues. These crystals can rupture or distort cells, which in time will kill the animals. Low temperatures will stop some of the vital chemical reactions needed for living. Some of the other problems faced by cold-blooded animals in winter are dehydration due to the freezing of body fluids and adjusting to changes between day- and night-time temperatures.

Most invertebrates and lower vertebrates that do not migrate will go into a period of hibernation, a resting stage when the animal stops feeding, growth, mobility and reproduction. Some animals will go into diapause, which is a genetically-determined resting state characterized by cessation of development and protein synthesis and by especially great supression of metabolic rate.

However, although these animals may be in a resting stage, they can still succumb from to the cold weather and freeze. Not all animals respond to this problem the same way, and much more research is needed to understand some of the intricate details, but here are some of the findings.

Insects are able to survive freezing by producing a physiological antifreeze similar to the one used in cars. The substances produced are glycerol, sorbitol, mannitol and others. Studies done on the carabid beetle show that this insect can survive temperatures of -35 degrees centigrade.

Some insects will spend the winter in a larval stage or as overwintering eggs. The larvae of Bracon cephi, a parasitic wasp, are able to survive temperatures of -17 degrees centigrade without freezing; the eggs of tent caterpillars, so common in our trees in New England, have been found to have glycerol in concentrations as high as 35 percent of their dry body weight.

Marine invertebrates and vertebrates like crabs, fish and others will have freezing points that are as low or lower than that of seawater, so that they will not freeze unless the water does. Some of the Artic marine fishes have protective antifreeze in their bodies to keep from freezing in the frigid polar region.

"Super cooling" is a term that is used in biology and physics. A super cooled fluid will not freeze unless it is disturbed by moving it or by seeding it with ice crystal. Some animals are able to become

super cooled, which allows them to survive temperatures that are well below their freezing point. The larvae of Bracon cephi are able to survive temperatures of up to -47 degrees centigrade in a super-cooling stage, and as long as it is not disturbed it will not freeze. Studies done on lower vertebrates like frogs, salamanders, turtles and others show that these animals will decrease their blood sugar, increase their liver glycogen, alter hemoglobin, oxygen and carbon dioxide concentrations in their blood, darken their skin and have other minor adaptations when they are in hibernation.

Homeotherms, the warm-blooded animals are much more complex. In order for us to completely understand how they regulate their body temperature, we would have to go into great scientific detail. There are however, some basic concepts that we can cover here.

Warm blooded animals regulate their own internal temperatures regardless of the climatic conditions in the environment. When the temperature falls homeothermic animals have to exert energy to keep warm. When the temperature soars animals need to stop producing heat and cool off. In extreme climates the expenditure of energy is the highest. There is an interesting relationship between body surface area and body volume. The body surface area is the area outside the animal, the skin surface; the volume is the inside of the animal. As animals increase in size there is proportionately less surface area per volume. The ratio between surface area and volume in an animal is similar to a balloon. When the animal or balloon is small it will have a greater surface to total volume ratio than when the animal or balloon is expanded.

Leonard Lee Rue III

Bears like this one prepare for winter by adding fat and a long winter coat.

If we take a balloon and begin to blow it up, it becomes larger and has less surface area per volume. This small geometrical proportion is very important, because it means that animals which are small have a larger surface area per volume than larger animals. Since animals lose heat through their surfaces, smaller animals will lose proportionately more heat than larger animals. We also find that animals having a larger volume will produce more heat while using less energy. Therefore, small animals have more difficulty maintaining their heat than large ones do.

As we have seen, small animals are under more stress to keep a constant temperature. Large animals on the other hand, because of their large volume, not only lose less heat but produce more heat. Besides their surface/volume ratio, they have a thicker protective skin. Several large animals have problems dissipating heat, especially when they are on land. The typical example is the artic seal. While it has no problems keeping cool in water, on land it can overheat.

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Lions and Tigers and Bears, Oh My!

Children's Attitudes Toward Wildlife Revealed in New Survey

If you think kids and wild creatures naturally go together, think again.

A recent study among school children in Connecticut suggest that, like many a love affair, the one between children and animals is bittersweet, at best. The pioneering study, sponsored by the U.S. Fish and Wildlife Service and Yale University, did not attempt to analyze the attitudes of children nationally, but provides a provocative glimpse into how our perceptions of wildlife may evolve through the childhood years.

"The fascinating results of this exploratory study suggest a major challenge for today's wildlife professionals," says Fish and Wildlife Service Director Robert Jantzen. "If we expect young people to deal rationally with complex wildlife and environmental issues, we must start channeling emotional attachments to animals toward a more balanced, realistic, and knowledgeable appreciation for the needs of wildlife and the natural system."

The study of "Children's Attitudes, Knowledge, and Behaviors Toward Animals" was conducted by Dr. Stephen R. Kellert of Yale's School of Forestry and Environmental Studies and Miriam O. Westervelt of the Fish and Wildlife Service. It included nearly 300 second, fifth, eighth, and eleventh grade students who represented all major demographic and geographic divisions within Connecticut. The survey was the final phase of a larger, five-part study of Americans' knowledge and attitudes toward wildlife commissioned by the Interior Department agency.

The survey found:

Like adults, the most common attitude among children was a "humanistic" one -- that is, a strong affection for individual animals, mainly pets.

The "naturalistic" appreciation for wildlife and the outdoors was much more common in children, especially eleventh graders, than in adults. For example, 59 percent of eleventh graders indicated a preference for being near wild animals while camping, against only 36 percent of adults surveyed by Kellert in an earlier study.

Children were just as likely to express a general dislike or fear of animals as that "naturalistic" appreciation, however. Younger children feared wild animals to a much greater degree than did older classmates. For example, 64 percent of second graders, 41 percent of fifth graders, 11 percent of eighth graders, and 16 percent of eleventh graders felt that most wild animals are dangerous to people.

Children, particularly those in the upper grade levels, disapproved of sport hunting. Like adults, they approved of hunting for meat, however. Fully 81 percent of eleventh graders (and 62 percent of adults) opposed sport hunting, while 60 percent of all children (and 85 percent of adults) approved of hunting for meat.

Although children's knowledge of animals was relatively limited, in certain specialized areas, like insects, children knew more than adults. Seventy-eight percent of children knew that spiders are not 10-legged creatures, as against 50 percent of adults, for example.

There are distinct stages through which children's attitudes toward animals evolve, the authors suggest. Between second and fifth grades, children showed a dramatic increase in their concern, sympathy, and affection for animals. Interests in animals became less narrow and early childhood fears began to disappear. Between fifth and eighth grades, factual knowledge about

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Got a Question?

DEP's Information and Education Unit Can Help

By Susan Subak, Environmental Intern

On any given day of the week, the Information and Education Section of DEP can expect to receive about 75 phone calls. The number of calls escalates in summer and diminishes in winter, peaks on Fridays and Mondays, and slackens midweek, but the incessant buzzing keeps the Information and Education staff on the jump.

The majority of these calls are transferred to one of DEP's myriad offices. Because DEP has a staff of approximately 700 and is divided into 20 units, the phone work is complicated at times, but the situation becomes a further challenge due to the novelty of the complaints, requests, or questions. What does one suggest, for instance, to a restaurant-goer who calls to report that she was served ice water containing "number one" fuel oil. We referred her to the Oil and Chemical Spills Section. This phone call was just one of the curious calamities recorded in our telephone log.

Last summer a caller reported she found a mountain lion in her back yard in North Haven. Another report about uninvited wildlife came from a Connecticut resident who was followed by a swarm of bees whenever she left her house. Where she was referred, we don't know, but we wonder if the Pesticide Control Unit might not be interested in analyzing her chemical makeup in order to synthesize an attractant for use in insect traps.

We sometimes receive reports of environmental catastrophes of varying dimensions. A man recently waded into a stream near his house to collect debris and found that the acid in the water had taken the hair off his legs. We transferred the call to the Water Compliance Unit, after conjecturing that the stream was not patented and approved as a depilatory. Other stream stories: callers have phoned in to complain about shopping carts in nearby stream beds. We surmised that the carts weren't an ichthyic home delivery system and so bypassed the Bureau of Fisheries in favor of the Water Compliance Unit.

Among Information and Education's favorite callers are the novelty seekers. We wonder if the query about the "furtakers of America," evidently a trapping organization, might be better suited to the pre-telephone days. One history-minded individual inquired where she might find valuable cobblestones in northwestern Connecticut. Another caller never tires of asking whether Connecticut will be opening any nudist beaches in summer.

As a twist on the complaint calls, the public occasionally volunteers verbal confusion and misidentifications. For example, "What shall I do about allergy in the pond." Another, "How do I get rid of terminites in the house?" A lady called in one day to relate her problem with "yellow dust." Appar-

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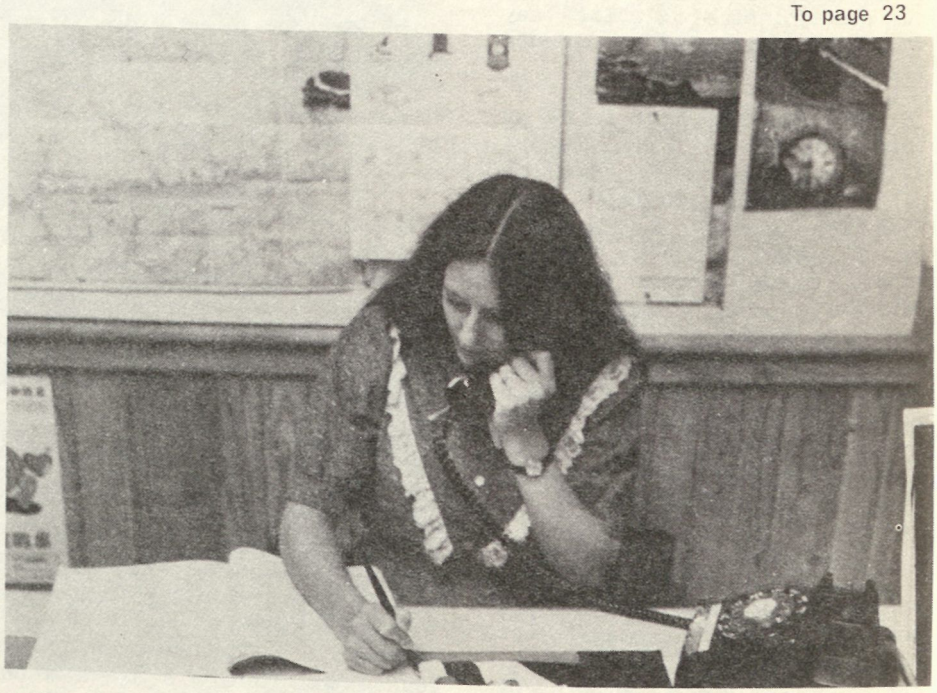


Susan Subak

Information and Education Unit staff are on hand to answer all kinds of questions -- environmental or otherwise.

Survival

From page 14

Mammals and birds go through many physiological changes preparing for the winter. One is the growth of a warm, thick winter coat. There is also an increase in fat production. Brain fat production, which increases blood irrigation in the body, is one of these physiological adaptations.

Although birds and mammals frequently function in the homeothermic mode and maintain relatively high body temperatures, many of them have the ability to let their temperature fall close to the low ambient temperature. There are four major forms of such controlled hypothermia: hibernation, estivation, daily torpor and winter sleep. Winter sleep is a condition experienced by bears, raccoons, skunks and other mammals. These animals sleep for long periods in protected microhabitats such as caves or tree cavities and allow their body temperatures to fall a few degrees while still maintaining it far above ambient temperature. This lower temperature allows the animals to survive longer on their fat reserves. Hibernation, estivation and daily torpor are different forms of a similar physiological process. In this form the animal relaxes its homeothermic processes more or less completely and allows its body temperature to approximate ambient temperature. In this state the metabolic rate decreases, and heart rate and breathing rate also fall. Although the animal can move to respond to its environment, there is an increase in lethargy.

Animals that let their body temperature vary with ambient temperature for several days or longer during the winter are true hibernators. When this occurs during the summer it is called estivation; if it only occurs for part of the day it is called daily torpor. Small rodents are mammals that go into daily torpor. Among the birds, daily torpor has been reported in night jars, poorwills, nighthawks and swifts. True hibernation occurs in hamsters, ground squirrels, jumping mice, and marmots. The millions of animals living around us have evolved some incredible ways of adapting to their habitats. Adjusting to variations in climate, some harsh and extreme, is just one facet of that adaptability. ■

Lions & Tigers

From page 15

animals showed its greatest increase. From eighth to eleventh grades, children gained a deepening concern for wildlife protection, a greater understanding of ecological concepts, and a relatively high moral concern for animal rights and cruelty issues.

Girls expressed a greater emotional affection for animals than did boys, and whites had a greater general interest in animals, particularly wildlife, than did nonwhites. Boys, whites, and rural residents possessed far greater factual knowledge about animals than did other groups of children.

Most children said they go to the zoo (93 percent), own a pet (87 percent), learn about animals in school (83 percent), feed birds (82 percent), and read about animals (76 percent). Whites were more likely than nonwhites to participate in activities involving animals, in general. Rural children engaged in more domestic animal activities, as well as hunting, fishing and trapping. Girls exceeded boys in their participation in only one activity -- birdwatching.

The authors emphasize that the small sample size of this survey, and the fact that it was confined to Connecticut, limits the generalizations that can be based on these data. However, the vast differences uncovered between children and adults and among various demographic groups may stimulate further research to validate the results, based on a larger national sample.

The full report, "Children's Attitudes, Knowledge, and Behaviors Toward Animals," is available for $6.00 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (telephone: 202/783-3238). (Orders should specify title and stock number 024-010-00641-2.)

Other reports in the five-part series on public attitudes toward wildlife are also available from the Superintendent of Documents at the same address. They are:

Phase I -"Public Attitudes Toward Critical Wildlife and Natural Habitat Issues"; $6.50; stock number 024-010-00623-4.

Phase II -"Activities of the American Public Relating to Animals"; $7.00; stock number 024-010-00624-2.

Phase III -"Knowledge, Affection, and Basic Attitudes Towards Animals in American Society"; $6.50; stock number 024-010-00625-1.

Phase IV -"Trends in Animal Use and Perception in 20th Century America"; $7.00; stock number 020-010-00621-8. ■

Trailside Botanizing
Marine Algae

By G. Winston Carter

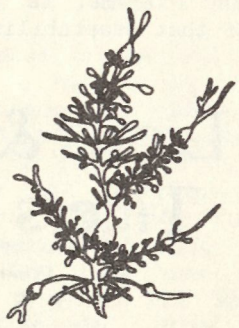
Illustrations: Rosemary Gutbrod

It is low tide and the receding water has left bare areas in the salt marsh strewed with green sea lettuce and a beautiful paper-thin red algae called Grinnellia. Higher in the marsh, where water trickles down to the water's edge, green ribbons of Enteromorpha are quite conspicuous. The mud between the stalks of tall cord grass (Spartina alterniflora) contains a green tint which, if

Grinnelli
(Grinnellia americana)

observed under a microscope, would turn out to be a mat of tiny filamentous algae called Ulothrix. This species of algae is also found in fresh water.

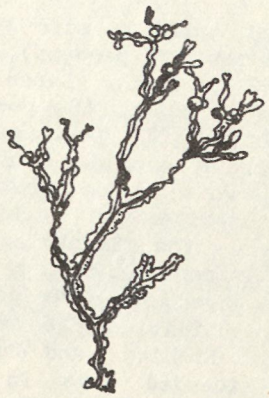
Some of the rocks protruding from the marsh hold clusters of the common rockweed (Fucus spiralis) with its ridged reproductive receptacles and the absence of paired bladders. This species of brown algae is exposed to the air about three fourths of the time and therefore has no need for an adaptation such as bladders to keep it afloat. Its related species Fucus vesiculosis or



Rockweed
(Fucus spiralis)

bladder wrack which is inundated a much greater part of the time, does have paired bladders.

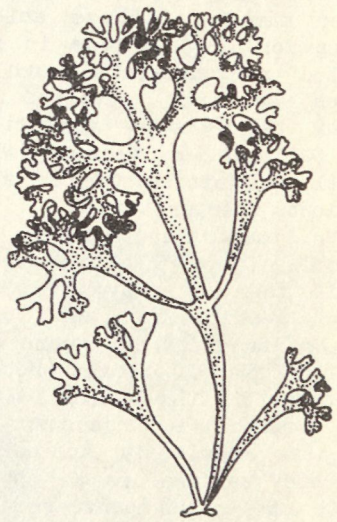
In the tidepools near the ocean edge are more of the red algae. Irish moss (Chondrus crispus) is much in evidence and Hildenbrantia, or pirate's blood, also a red algae, appears as a bright encrustation on the rocks.



Bladder wrack
(Fucus vesiculosis)

The tide is way out, offering a good opportunity to see another rock clinger, knotted wrack (Ascophyllum nodosum). This brown algae has numerous air bladders which are quite large. They help to keep the plant afloat and regulate its depth.

The larger algae, red, green, and brown, all have conspicuous root-like holdfasts which have one main function,

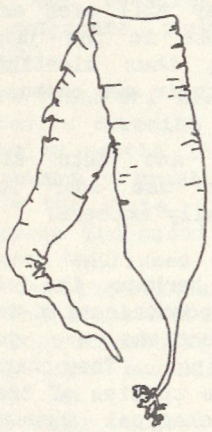


Irish moss
(Chondrus crispus)

that of keeping the plant from going adrift.

Beachcombing reveals a wider diversity of forms for study. On certain occasions, particularly after storms, masses of kelp are washed ashore. In some places this brown algae grows to 300 feet

or more, as in the case of the giant kelp (Macrocystis) off the California coast. Here, on the Connecticut coast, the kelp is much smaller, reaching no more than about 20 feet. The common species is Laminaria agardhi. It has a conspicuous branched holdfast and a broad wave-like frond. Often colonies of colonial sea squirts or colonial hydrozoa are found attached to the rather smooth, rubbery surface. A hand lens will reveal many interesting details of these interrelationships.



Kelp
(Laminaria agardhi)

Sponge seaweed (Codium fragile) is a green algae which is a relative newcomer to the assortment of debris that the waves bring in. It is branched and sponge-like as its common name implies. Agard's weed (Agardhiella tenera) is many branched and very gelatinous -a couple of handfuls would make a spectacular red wig!

Devil's shoestring (Chorda filum) shows up occasionally along the beach, originating in the subtidal region. It consists of a single tough, leathery, rope-like strand, often reaching a length of 16 to 18 inches.

A red algae that shows a plant-to-plant relationship (epiphytic) is Polysiphonia. It is rather delicate but bushy and is often found in association with knotted wrack (Ascophyllum nodum). They are sometimes both washed ashore together.

These are but a sampling of the many types of algae that appear on Connecticut shores. Each week brings something different. Some species of algae appear only during certain months, and there are differences from year to year. But it seems that there is always something worthy of attention.

This is the world of the seashore. It is a world filled with beauty and discovery at every turn, and combined with all this is the typical smell of the ocean and the persistent cry of the gulls. The bird life and the numerous invertebrates that adapt themselves so well to the intertidal zone are a separate study and all part of the interrelated whole, but the algae by themselves offer a rich field for exploration.

Marine algae are generally classified and identified by color. The microscopic algae, the diatoms and dinoflagellates, that made up the "grass" of the sea will not be considered here.

The major types which will be discussed are the blue-green, the green, the brown, and the red algae. All of them have chlorophyl but it is masked in many by other pigments. These algae do not have true roots, stems, or leaves. They absorb the things that they need, such as carbon dioxide, nutrients, and water directly through their outer wall. They may take many forms, thread-like, branched or sheet-like. Many of the larger algae have a root-like structure which allows them to stay in place. This is called a holdfast. The holdfast is connected to a stem-like part called a stipe which in turn supports the blade, or frond.

Most marine algae can reproduce sexually and asexually. Some of the brown algae such as rockweeds depend on sexual reproduction alone.

The algae found along the Connecticut coast are usually distributed into rather distinct zones. Furthest from the water's edge, the accumulation of many small mat-like filaments creates a broad band of black on rocks, known as the black zone, which consists of primitive blue-green algae, mostly Calothrix. Below these there are usually found a number of green algae such as the many-branched Cladophora, the ribbon or tube-like Enteromorpha, or the broad leaf-like sea lettuce (Ulva). The zones continue down to the water's edge and below. The brown algae zone is next, followed by the Irish moss zone and the kelp zone which extends beyond the water's edge into the sub-tidal zone.

Sea lettuce
(Ulva)

Algae play an important role in the natural world as food and shelter for an amazing number of animals. They represent the starting point for the food chain that leads up to birds, fish, and mammals. Algae help to maintain the earth's oxygen supply by their photosynthetic process. They give off more oxygen than land plants. Since ancient times, algae has served as an important source of food in a number of places in the world, particularly in the Orient. They have also been a valuable source of fodder and fertilizer

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Animal Alert!

Reprinted from Outdoor Highlights, Illinois Department of Conservation.

Man is the only animal with the ability to talk, but that doesn't mean other animals cannot communicate with one another. On the contrary. Birds sing out messages to one another, deer establish their territories with a variety of odors and visual markers, and scientists have even recorded the music of whales, which they assume is their means of communicating with one another.

And while mating, establishing territories and calling to alert others to nearby food and cover is important, animals' communication efforts are most important when announcing that danger is near. Animals live in a hostile world -- a world abounding in predators and other forms of danger -- and they have developed some unique, and sometimes subtle, methods of spreading the word that trouble is in the offing.

Beavers slap their flat tail on the water's surface to alert other beavers using the pond or stream that an intruder is in their midst. The white-tailed deer uses practically all of its senses to communicate alarm. Hunters know that when the "white flag" is up, other deer will be alert. The flag, of course, is the white hairs on the underside of the deer's tail. Deer also will snort, stamp their feet on the ground, and emit an odor as a warning to other nearby whitetails.

The tail also is used by the dove to warn other doves of nearby danger. When the dove flushes, the white "V" of its spread tail feathers are a signal to other birds. Squirrels and several species of fish use the same method. Squirrels will flick their tails when alarmed, as will fish, to attract and alert others in the vicinity.

The woodchuck calls out danger in the form of a whistle. This signals other woodchucks to take cover and has earned the woodchuck the nickname "whistle pig."

Birds issue similar signals. While their whistling is used for mating and to announce the discovery of food, most species also have an alarm whistle, which, when sounded, will send the entire flock into flight. Crows have adopted a different tactic. Rather than be frightened away by the presence of a predator, they will begin a loud "mobbing" call that will attract other nearby crows to the area to help drive the intruder away.

Odor is another common warning signal. Scientists have found that alarmed fish, especially minnows, give off a scent to warn other members of the school that danger is nearby. They will even emit this odor while in the jaws of a predator, thus alerting other fish at their own expense.

Bees and ants also are known to use odor to alert other family members.

But perhaps the strangest form of communicating danger is one scientists are just now discovering. They have found that some species of trees will emit a chemical through their root system to let other nearby trees know of an impending encroachment to their territory. ■

Leonard Lee Rue III

"White flag" of white-tailed deer alerts others to possible danger.

Flood Hazard Planning in Connecticut

By Diane Giampa, Public Participation Coordinator

Members of the CAM staff have been working closely with the state's Office of Civil Preparedness, and the DEP's Water Resources Unit and Natural Resources Center to come up with some recommendations to improve the coordination of flood management programs in Connecticut.

As we remember, last year's June Flood, a riverine flood in which twelve people lost their lives, caused a great deal of damage in the state. Preliminary reports indicated that 37 homes were demolished and 1500 others were significantly damaged. The state's total commercial and industrial losses, including lost business, were estimated at $92 million. Eighteen major state bridges, 25 municipal bridges and four sewage treatment plants were severely impaired. Overall, the estimates of the total damage caused by the flood run as high as $270 million.

There has been a longstanding concern in the state over the effects of flooding on lives and property. Former Governor Ella Grasso responded to this back in 1977 when she issued Executive Order Eighteen, which set out guidelines governing any state activities that affected land use planning in a flood plain, such as the construction of state buildings, roads or other properties, and the administration of grant or loan programs directed toward building in the flood plain.

Last year's June Flood was not technically a coastal flood. In fact, it has been almost 30 years since coastal Hurricane Diane, following Hurricane Connie by only a week, brought extensive destruction to Connecticut's shoreline. Because it happened so long ago, people tend to forget the damage that a coastal storm can create. In the process of working on the Coastal Flood Hazard Planning Study, staff members are identifying coastal flooding issues and are investigating ways to improve our state's flood management procedures.

One proposal under investigation is to make the provisions included in Executive Order Eighteen part of the Connecticut General Statutes. This would give these flood management policies the status of law in the state. Another suggestion under study is aquiring long term coastal data on the effects of wave activity in Long Island Sound, and looking at the implications of rising sea level to see how this information can be used for more effective flood management. To heighten public awareness of the issues, two workshops have been held in the past year and a half on the topic of flood preparedness, one for municipal officials and one for commercial and industrial property owners. When this research effort is complete, staff members will make recommendations to DEP Commissioner Pac and the end result should be a better prepared, better coordinated network of preparation and responses in the event of a flooding disaster. ■

coastal area management
71 capitol avenue hartford conn 06106

CAM Photo

Extensive coastal flood damage to the New London Railroad tracks after the 1938 Hurricane.

Use Land Resource-fully

Workshops Offered for Municipal Officials

If you are a local planning, zoning, conservation or inland wetlands official and have never been to one of the seminars offered on "Local Control of Land Use," then this should be your year to attend. Particularly if you live in Middlesex County, you will want to catch this six-week series on natural resources and town planning and development decisions.

Begins March 20

This year the series will be offered at the Middlesex Extension Center on Route 9A in Haddam. This is the first time that the series will be located in Middlesex County, but it has been held in every other county in Connecticut during its 10-year history. Beginning on March 20, 1984 and running through April 17, the seminars will be given every Tuesday night on various topics; a Saturday field trip is scheduled for April 14. Subjects to be covered include: basic planning processes; available natural resource information for planning purposes; soils and geological systems; inland wetlands; erosion and sediment controls; floodplain management; groundwater protection; site plan review; engineering terms and principals; lakes management; and many of the legal tools and procedures necessary for sound land-use decision making. Many speakers who are experts in these fields have been recruited to lead seminar discussions.

Leslie Bieber

Participants at last year's land-use workshop in Litchfield.

10-Year History

When the seminar series was first introduced in 1972, the leaders concentrated on teaching map skills to the course participants. The use of overlay maps was demonstrated, and some of the sessions were spent actually assembling these maps. Today the series has been greatly expanded, evolving from the original concepts into an explanation of the natural resource processes which effect planning and development decisions for a community. Sophisticated tools are introduced, and major problem areas confronting commission members on a routine basis are discussed. The focus of the series now is on practical knowledge tailored to the commission members' needs. All of the course materials are carefully chosen to serve both as background information and as daily operating guides.

Record Attendance

The 1983 seminars in Litchfield County broke all attendance records for the series. Usually between 75 and 100 people attend the courses on a regular basis, but last year 186 eager participants appeared faithfully every Tuesday night to hear the session's speakers. New facilities had to be obtained in order to accomodate the larger crowd,

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Question

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ently the stuff had settled on her car and swimming pool. She feared that it might be volcanic ash, or the result of defective swimming pool chemicals, and dismissed the suggestion that the "yellow dust" might be pollen.

One piece of legislation that generates quite a few calls is beverage container deposit legislation. Aside from the usual questions about what beverage is redeemable and who is obligated to accept which containers, I & E has received complaints such as: "Yesterday some plastered retailers did not accept our bottles." Or from the retailers, "Who's going to pay for my new carpet after people coming in with bottles and cans spill beer on it?"

I & E receives many calls from people who fear they may be endangered by environmental hazards. These hazards may be pesticides, contaminated water, polluted air, or problems closer to home, such as concerns over children eating insecticide-coated fruit -- or the following rather touching question, "Can I use chlorine in my dog's wading pool?"

And then we have the "I guess I can ask you anything calls." We recently talked with a gentleman who wanted to know who he should confer with before building a crematorium for his family. After some thought, he was referred to the Air Quality Unit. Another asked, "Do morning doves mate forever?" And, "Can I catch wild turkeys?" One of the office favorites is "I'm not sure if you can help me, but I need to know...Can you freeze macaroni salad?" A question like this does not set us reaching for the pink DEP telephone directory or trying for instant number recall, but sets us wondering what expectations people have of our services. The German word for "Environmental Protection " is "Umweltschuetz," meaning literally, the protection of the world. We would like to think of ourselves as capable of answering or at least transferring calls covering the range of world problems, but realistically,other departments and the state and local libraries can help out here. ■

Algae

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for farmers who live near the coast. The brown algae in particular is a good source of potash and iodine.

Today, more dramatic uses are being made of algae. They are still used for their nutritional purposes, but their real value is in industry and medicine. Because of this, algae has become one of the most important resources of the sea.

The red and brown algae are the only kinds that have commercial value at present. The main commercial products of red algae are agar and carrageenin, while a very valuable substance obtained from brown algae is algin.

Agar is obtained from such red algae as Gigartina which is often found growing with Irish moss. It has a very high gel strength and a wide range of temperatures between the point of gelling and melting. Agar is used as a bacteriological medium and is also used in the cosmetic, pharmaceutical, and food industries.

Carrageenin is obtained from Irish moss (Chondus crispus), another red algae. It is similar to agar but has a lower gel strength. It liquifies at lower temperatures than do agar gels. Carrageenin is useful as a stabilizer for chocolate milk and ice cream and as a thickener for icings and puddings. It is also useful in the preparation of hand lotions and insect sprays.

Algin is the substance that gives rigidness to the cell walls of such brown algae as Ascophyllum, Fucus, and Laminaria. It has many valuable uses in the food, pharmaceutical, and textile industries. One type of algin is the basis of an antiradiation drug. One of the major sources of algin is the giant kelp (Macrocystis) of the California coast. Under favorable conditions, this species of kelp grows nearly two feet in a day and thus can be harvested at regular intervals by underwater mowers.

Apart from their beauty, diversity, and interesting adaptations, it may have come as a surprise that marine algae play so many roles in our lives. Through continued research, they may reward us with even more important contributions to our health and well-being. ■

Workshops

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but everyone seemed to be unruffled by the changes and stimulated by the sessions. We are hoping for a crowd of similar proportions in Haddam!

Registration Information

The fee for attending the series is $35 per person, or $100 per town, which covers every town official or employee wishing to participate. Checks should be made out to the Middlesex County Extension Council and can be mailed to the Extension Center or to the DEP Natural Resources Center, Room 553, State Office Building, Hartford, CT 06106. Informational brochures have been mailed to all municipal planning, zoning, inland wetland, conservation, and economic development commissions, but additional copies can be obtained from the Natural Resources Center or the DEP Information and Education Unit. Please call Mary Ann Dickinson at 566-3540 or Leslie Bieber at 566-3489 for any further information. ■

Campground Reservations Accepted by Mail

William F. Miller, Director of the DEP Office of State Parks and Recreation, has announced that reservation forms for the busy May 15 to Labor Day camping season are now available and will be accepted beginning January 15.

"Applications must be submitted on the official 1984 form, by mail only. Forms may be obtained by telephoning 566-2304 or writing to DEP, Office of State Parks and Recreation, 165 Capitol Avenue, Hartford, CT 06106," Miller said. "There is an application form in each copy of 'Camping in Connecticut', a free folder that lists available sites, fees, season dates and other details and is available at the same address."

Reservations must be for at least two nights buy not more than 21. A check or money order for the full fee must accompany the reservation form, payable to Treasurer, State of Connecticut. There must be five days between stays at the same camp but the five-day wait is not required if the camper moves to a different park or forest. "Applications," Miller said, "must be mailed to the Hartford address from January 15 through April 15. After that they should be sent directly to the campground desired, along with the required payment."

No reservations are required from April 15 through May 14 or from Labor Day through September 30 when campsites are assigned on a first-come, first-served basis at all campgrounds. No reservations are accepted, at any time, at Sleeping Giant State Park, Cockaponset State Forest or Pachaug State Forest.

Parks and Rates

The parks for ordinary camping and their rates per night are $4.00 per night for: Devil's Hopyard State Park in East Haddam, Macedonia Brook State Park in Kent, Mashamoquet Brook State Park in Pomfret Center, Filley Road area in Cockaponset State Forest and Mt. Misery area in Pachaug State Forest; $6.00 per night for: Black Rock State Park in Thomaston, Hopeville Pond State Park in Jewett City, Housatonic Meadows State Park in Cornwall Bridge, Kettletown State Park in Southbury, Lake Waramaug State Park in Kent, Taylor Brook Campground at Burr Pond State Park in Winchester, American Legion State Forest in pleasant Valley and the Green Falls area of Pachaug State Forest in Voluntown; $7.00 per night for Hammonasset Beach State Park in Madison and Rocky Neck State Park in Niantic.

Horse and Rider Camps

Riders seeking campsites where horses are accepted will find 28 sites at the Silvermine Horse Camp, Natchaug State Forest in Eastford; and 20 sites at Frog Hollow Horse Camp, Pachaug State Forest in Voluntown. The fee is $6.00 per night at each of these areas. Reservations may be made by calling (203) 974-1562 for the Silvermine Camp and (203) 376-4075 for the Frog Hollow Horse Camp.

Canoe Camping

Canoe camping is also available. Hurd, Gillette Castle and Selden Neck State Parks on the lower Connecticut River offer canoe camping at a fee rate of $1.00 per person per night. Written requests for reservations should be submitted at least two weeks prior to the intended stay to: Mr. Donald Grant, Manager, Gillette Castle State Park, East Haddam, Connecticut 06423. ■

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